

Decimal fractions – tenths, hundredths and thousandths

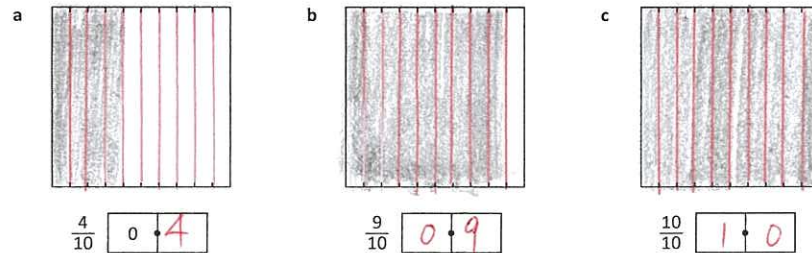
Common fractions and decimal fractions are related as they both show parts of a whole. In common fractions, we divide a whole into parts such as halves or sixths.

In decimal fractions, the whole is partitioned using the base 10 system – into tenths, then hundredths, then thousandths and so on.

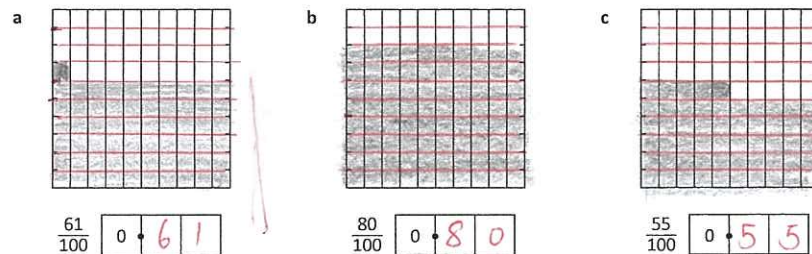
We use a decimal point after the unit to indicate the end of whole numbers: 6.42

If the number has no whole numbers, we use a zero to make sure we don't miss the decimal point: 0.42

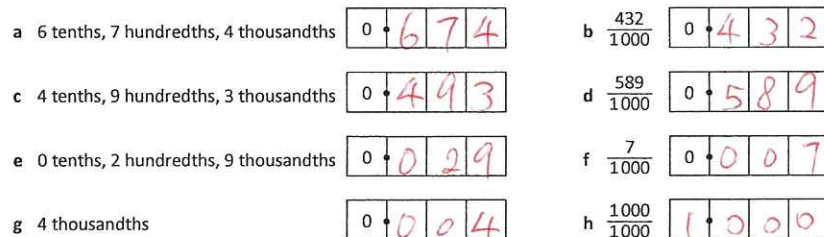
- 1 Divide these wholes into tenths and shade the specified amounts. Write each as a decimal fraction:



- 2 Now divide these wholes into hundredths and shade the specified amounts. Write each as a decimal fraction:



- 3 Express these as decimal fractions:



Decimal fractions – reading and writing decimals

When we write decimals we follow this place order:

Thousands	Hundreds	Tens	Units	Tenths	Hundredths	Thousandths
			2	2	5	6

Numbers **before** the decimal point are whole numbers.

Numbers **after** the decimal point are parts of a whole number.

The further the digit is to the left in the number, the greater its value. The further it is to the right, the smaller its value.

- 1 What is the value of the digit in bold? Tick the correct column:

	Thousands	Hundreds	Tens	Units	Tenths	Hundredths	Thousandths
a 5.892						✓	
b 13.05						✓	
c 763.22		✓					
d 89.021				✓			
e 100.001							✓
f 560.45					✓		
g 312.956			✓				

- 2 Read each number and write it as a decimal:

- a four units, one hundred and twenty two thousandths 4.122
- b one hundred and eleven, and sixty five hundredths 111.65
- c three hundred, and forty two thousandths 300.042
- d four thousand, and twelve hundredths 4000.12
- e twelve, and 13 thousandths 12.013
- f two hundred and thirteen, and forty-three hundredths 213.43

Watch out for the commas! They indicate the end of whole numbers.



CHECK

- 3 These answers are all close but incorrect. Write the correct answers:

- a twenty seven tenths is written as 0.27 No it's not, it's written as 2.7
- b forty eight hundredths is written as 0.048 No it's not, it's written as 0.48
- c 9000 thousandths is written as 0.009 No it's not, it's written as 9.0
- d eleven and 12 hundredths is written as 11.012 No it's not, it's written as 11.12
- e 167 hundredths is written as 16.7 No it's not, it's written as 1.67

Decimal fractions – comparing and ordering decimals

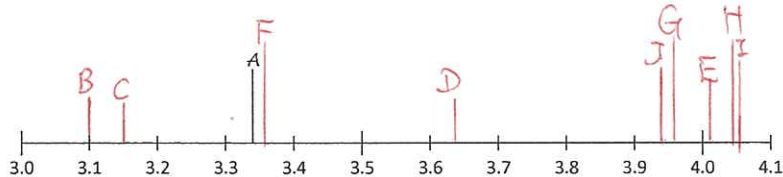
We need to carefully consider the place value of digits when ordering and comparing decimals.



- 1 6A has a very cool teacher who decides to harness, not ban, the class' current obsession with pea shooting. After a week of intense training, a shoot-off occurs. The results for the top ten shooters are tabled on the right.

	Name	Distance
A	Spitter Macgee	3.34 m
B	Did You See That One Big-noter	3.1 m
C	Secret-ingredient Spitski	3.15 m
D	Dead-eye Jones	3.63 m
E	The Long Distance Shooter	4.01 m
F	Sally Straw	3.36 m
G	Technique Tezza	3.96 m
H	Lone Shooter	4.04 m
I	Double Or Nothing Danielle	4.05 m
J	Shoot Dog	3.94 m

Place the students on the number line. The first one has been done for you.



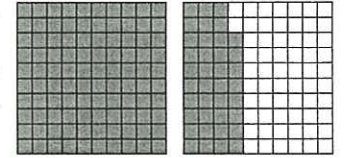
- 2 Use the above information to answer the following questions:

- Who shot the furthest on the day? Double Or Nothing Danielle (I)
- Whose shot was the shortest? Did you see That One Big-noter (B)
- Which students' shots were 1 hundredth of a metre apart?
Lone shooter (H) and Double Or Nothing Danielle (I)
- What was the difference between the shots of Shoot Dog and Spitter Macgee? $3.94 - 3.34 = 0.6m$
- Do you think you could beat this? Something to try at home perhaps? Even 6A's teacher eventually had enough of the pea shooting.

Decimal fractions – renaming decimals

We can express the same decimal fraction in different ways. This shows 138 hundredths.

We can also express this as 1 unit, 3 tenths and 8 hundredths or 13 tenths and 8 hundredths or 1 unit and 38 hundredths.



- 1 Rename these fractions:

- 37 hundredths is also 3 tenths + 7 hundredths
- 53 hundredths is also 5 tenths + 3 hundredths
- 99 hundredths is also 9 tenths + 9 hundredths
- 6 tenths and 3 hundredths is also 63 hundredths
- 4 tenths and 9 hundredths is also 49 hundredths
- 4 tenths, 9 hundredths and 8 thousandths is also 498 thousandths
- 0 tenths, 5 hundredths and 8 thousandths is also 58 thousandths

It may help to write these numbers in their decimal forms.

- 2 Now try these. Fill in the missing information:

- 4 units = 40 tenths = 400 hundredths = 4000 thousandths
- 7 units = 70 tenths = 700 hundredths = 7000 thousandths
- 2.5 units = 25 tenths = 250 hundredths = 2500 thousandths
- 9 units = 90 tenths = 900 hundredths = 9000 thousandths



- 3 Rename these numbers as many ways as you can. Use the abbreviation: H for hundredths, T for tenths and U for units:

5.67	2.52	9.81
<u>5U 67H</u>	<u>2U 52H</u>	<u>9U 81H</u>
<u>5U 6T 7H</u>	<u>2U 5T 2H</u>	<u>9U 8T 1H</u>
<u>56T 7H</u>	<u>25T 2H</u>	<u>98T 1H</u>
<u>567H</u>	<u>252H</u>	<u>981H</u>